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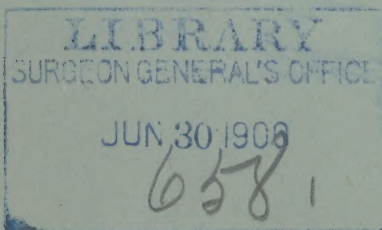
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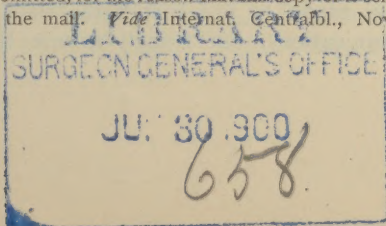
**THE ASEPTIC METHOD AS APPLIED TO  
INTRA-NASAL SURGERY.**

BY JOHN O. ROE, M.D.,  
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No medical or surgical procedure has shown a more remarkable growth than the antiseptic method as applied to the treatment of wounds—a method which has created a new epoch in the art of surgery, and has made immortal the name of its first scientific expounder.

In the earliest application of this method the primary object was to destroy the noxious germs which infest the wound and which obstruct the healing of the part by the putrefactive or fermentative processes due to their presence. This early procedure, which may be regarded as strictly antiseptic in its character, has gradually given way to the method of asepsis, the purpose of which is to prevent the infectious germs from gaining entrance to the wound.

<sup>1</sup> Read before the Laryngological Section of the Tenth International Medical Congress, Berlin, August 7, 1890. (In the first report of this Section sent to the journals by its Secretary a synopsis of this paper was omitted, for the reason that the copy of it sent to him was lost in the mail. *Vide Internat. Gent. Abh.*, Nov. 1890, p. 234.)



In the application of the aseptic method, nasal surgery has not kept pace with other branches of the surgical art; and, therefore, the result of intra-nasal operations cannot compare favorably with operations upon other parts of the body in which aseptic measures are more thoroughly and efficiently employed. It is on this account that some rhinologists regard with disfavor the performance of any important surgical operations in the nasal cavity. The intra-nasal surfaces are considered so intolerant to foreign substances that it is quite generally believed that any method which renders the nasal cavity aseptic after an operation cannot be tolerated by the patient. It is my purpose to show in this paper that aseptic measures can be as adequately and successfully employed in intra-nasal as in other surgical operations; that the field of operation can be as thoroughly cleansed and sterilized; that during the operative procedure all the aseptic measures which are deemed essential in operations upon other parts of the body, can and should be carried out in the nose; and that in the dressing of the wound the parts can also be completely sterilized and sealed both to internal and external noxious influences.

In order to ascertain the methods which are at present employed by different operators in this field of surgery, I wrote to a number of distinguished specialists, requesting from each a brief statement of the procedure which he adopted in the dressing of wounds of the nose after operations. I regret that the limit of this paper does not permit me to give full credit to my friends for their valuable communications, but I shall reserve this for another



article. Only one of the number adopted a method which he deemed aseptic in its nature. Nearly all, however, considered the employment of some kind of antiseptic measures after operations of very great importance; but everyone who expressed himself upon the subject believed that the comparative inaccessibility of the nasal cavity and the peculiar office and function of the nose precluded the possibility of employing any other than the "open method" in the healing of intra-nasal wounds.

The disadvantages attending the open method and the dangers to which the patient is subject are many. The first and most immediate danger is that of hæmorrhage after the styptic effects of the cocaine have disappeared. Again, there is a danger arising from infection due to the absorption of purulent or other noxious substances which may be generated in the nose, or to the germs of infectious diseases, such as erysipelas and the like, to which the unprotected surface is exposed. Moreover, there is the general inconvenience due to the great amount of care and attention required, and to the very frequent use of antiseptic washes and sprays necessary, which cannot be employed by the surgeon as often as the conditions require, and which, if left to the patient, will in almost every case be very imperfectly performed.

The disadvantages and inconveniences of the open method have suggested to some operators the use of some form of closed dressing. The method, however, that is usually employed is covering the wound with small pledgets of borated, bichloride or iodoform cotton, wool, or gauze. The inadequacy

of such coverings is apparent. They are not only insufficient to exclude from the wound the germs contained in the acrid nasal secretions and those floating in the atmosphere, but such bits of cotton or wool simply lie in the nostril as foreign irritating substances.

Firmly convinced of the importance of some form of closed dressing, I was some time ago led to adopt certain measures which would avoid the defects just mentioned, and which would render the nasal cavity as nearly as possible aseptic during the healing of the wound. The methods which I have found best suited to this purpose I will briefly describe.

Previous to the performance of the operation, the nasal cavity is thoroughly cleansed with a warm alkaline antiseptic solution, consisting of salt, boric acid, and bichloride of mercury (1 to 4000). It is needless to say that the instruments should be as scrupulously clean and sterilized as in operations upon other parts. A sterilized cocaine solution is then thoroughly applied (either in the form of a spray or by means of cotton wound upon a probe) until the parts are rendered insensible. The advantages of cocaine are very great. It not only relieves the pain of the operation, but, by contracting the soft tissues and by preventing hæmorrhage, it greatly facilitates carrying out the subsequent aseptic procedure.

After the operation is completed, and the wound is completely cleansed from all débris, irrigated with a hot solution of sodium chloride and bichloride of mercury (1 to 4000), and thoroughly dried, the wound, or rather the whole of the nostril, is

dusted full of iodoform powder. The nose is then carefully and thoroughly filled with an antiseptic dressing, so as to seal hermetically the cut surfaces against bacterial invasion. This is done by means of plugs, consisting of thin metallic plates evenly, carefully and firmly wound with antiseptically prepared Angora wool or bichloride cotton, and which before being introduced are dipped into a solution of bichloride of mercury (1 to 3000). The utmost care must be exercised in plugging the nostril. The metal plugs should be of such size and shape that, when wound with cotton and inserted in the nostril, they completely cover the wounded surface. The thickness of the plug, which is regulated by the amount of cotton or wool that is wound on it, should be carefully adapted to the size and shape of the cavity which is to be plugged, so that it exerts an equable and somewhat firm pressure upon the whole of the wounded surface. The plug, when thus prepared, is firmly grasped with a pair of strong dressing forceps and carefully inserted, the nostril being dilated with a suitable speculum, and illuminated to enable the operator to guide the plug to its proper place. The metal plates can be made of any material. A flexible metal, like tin or copper, in thin sheets is preferable, as it permits the plugs to be bent to the exact shape and contour of the cavity. Ordinarily the plate is covered so thickly with the cotton as to prevent any irritation from chemical combinations with the metal. However, to guard against the possibility of this, they can be made of aluminum. The plug should not, when inserted, exert so much pressure as to be irritating to

the patient, who should experience no more than the slight discomfort of being unable to breathe through that nostril.

When an operation in one nostril is sufficiently extensive to involve both the upper and lower portions, it is impossible to introduce a plug wide enough to cover the whole extent of the wounded surface. It then becomes necessary to introduce two or more plugs, beginning at the top of the nostril. The first plug is so shaped that it will fit the upper contour of the passage, and the successive plugs are put in below, until the last one passes evenly and snugly along the floor of the nostril. The length of the plugs should be governed by the extent of the wound and also by the depth of the nasal passage. There is no danger of introducing in the upper portion plugs which are too long, as the nostril will not permit it; but the one along the floor of the nose should not be long enough to reach the orifice of the Eustachian tube, and thereby to cause any obstruction of this canal.

When the plugs are removed, if the wound is not sufficiently healed, the nostril should be thoroughly irrigated with the sodium chloride and sublimate solution, dried and dusted with iodoform powder, and the antiseptic plugs again inserted. It is not necessary at this time to use plugs that fit so tightly as at the first dressing, since the danger of bleeding has passed. The second plugs can almost always be allowed to remain until the wound is sufficiently healed to require cleansing only, which should be done two or three times a day with an antiseptic wash or spray. In cases in which both



nostrils require operations, if they can be dealt with separately, it is best to operate on but one at a time, performing the operation on the second after the first has healed. Thus, by obstructing but one nostril at a time, nasal respiration is maintained as far as possible.

It will be seen that in this method of rendering the nasal passages thoroughly aseptic, I have not employed any new antiseptic or aseptic agents. But this form of dressing for the purpose of hermetically sealing the passages after they have been rendered thoroughly aseptic, has not hitherto been advocated or employed.<sup>1</sup>

The advantages of this procedure over the open method of treatment are very great.

1. It effectually prevents hæmorrhage. In certain cases in which extensive operations are performed, not more than a slight oozing of blood from the wounded surface can take place, on account of the firm and uniform pressure which this flat packing exerts. In all cases this method of arresting nasal hæmorrhage is far superior to the old method of plugging the nose posteriorly, or packing it anteriorly with cotton or similar substances.

2. All purulent formation is prevented. Septic absorption cannot take place, and, therefore, constitutional disturbances, except those that are the immediate results of the operation or the effects of the cocaine, are averted.

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<sup>1</sup> Dr. Kitchen, of New York, has proposed a method of plugging the nose similar to that which I have described (Medical Record, January 7, 1888). He does not, however, emphasize the antiseptic uses for which this form of dressing is especially adapted.

3. It enables the operator to complete at one sitting all the operative procedures required in one nostril, however extensive, with no subsequent disturbance to the patient greater than that which commonly results from a slight operation when the open method is adopted.

4. The inconvenience of frequently cleansing or irrigating the nostril with an antiseptic solution after the operation is avoided; for this dressing, if properly placed in the nostril, can be allowed to remain from four to six days, or even longer, according to the thoroughness with which the wound and the dressing have been made aseptic.

5. Under this form of dressing the wound heals readily, quickly and smoothly. Granulations are not permitted to spring up, so that when the parts are healed the passage remains free and unobstructed; and when opposite walls of the nostrils are wounded, the liability of those surfaces to grow together, or of fleshy bands to form across the cavity, is entirely prevented.

6. It may be mentioned also that this method of plugging the nose in case of epistaxis is much less likely to cause aural complications than is the ordinary method of plugging the posterior nares.

7. In the dressing of fractures of the nose or operations for correcting deviations of the septum, this form of dressing is superior to any other for the purpose of holding the parts in place; and when applied it is not necessary to replace it or to disturb the wound for a number of days, so that the union of the fractured parts is not interfered with, as is the case with the ordinary methods of holding the parts

in place by metallic clamps, hard rubber plugs, and similar devices.

In conclusion I would call attention to the importance of such a form of dressing after the employment of the galvanic cautery. The actual cautery is generally believed to be the best sterilizer, and is often used for searing the surface of wounds after cutting operations in order to prevent hæmorrhage and the absorption of septic material. Gerster says: "The actual cautery is the most effectual sterilizer."<sup>1</sup>

This is true so far as it relates to the destruction of the germs with which the cautery comes in direct contact; but it must not be forgotten that a burned mucous surface is the most active absorbent surface, and the most productive of copious purulent formations.

In the case of a simple burn of the skin, if it is allowed to remain exposed to the atmosphere extensive inflammatory action will set in, owing to the active infection of the surface by germs. On this account it is rare for even slight cauterization of any part to be unattended with swelling and constitutional symptoms far in excess of those which usually attend a cutting operation upon the same region. In the treatment of all burned surfaces, therefore, the most thoroughly aseptic precautions are of the utmost importance.

Looking at this subject from a scientific point of view, when we consider the large number of varieties of benign and of disease-germs which are found in the nasal secretions, and when we consider that the

<sup>1</sup> Antiseptic Surgery, p. 3. New York, 1888.

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tissues of the nasal passages are the most rapid absorbents of the mucous surfaces of the body, it would seem to be inexcusable to treat a wounded surface in the nose by the open method, and thus to afford a feeding-ground for the numerous bacteria which with every breath are deposited upon this exposed surface.

The form of dressing by means of intra-nasal plugs prepared and applied in the way that has been pointed out, is therefore recommended as a practical mode of dressing intra-nasal wounds, and one which fulfils all the aseptic precautions required in every branch of modern surgery.









